

What is claimed is:

1. An in-vehicle hands-free apparatus for making a hands-free call using a telephone in a car, comprising:
 - a storage unit operable to store a voice of a party on the other
 - 5 end of the hands-free call uttered during said call;
 - a situation analysis unit operable to analyze a surrounding situation of the car based on information outputted from at least one sensor for detecting the surrounding situation;
 - an action determination unit operable to determine an action
 - 10 on a state of the call between a user of the telephone and the party based on a result of the analysis of the situation analysis unit; and
 - a playback output unit operable to play back the voice of the party stored in the storage unit based on the action determined by the action determination unit and output said voice for the user.
- 15 2. The in-vehicle hands-free apparatus according to Claim 1, wherein the action determination unit switches the state of the call by selecting either a call state in which a call can be made or a hold state in which a call cannot be made.
- 20 3. The in-vehicle hands-free apparatus according to Claim 2, wherein the playback output unit plays back the voice of the party stored in the storage unit and outputs said voice for the user when the action determination unit switches the state of the call
- 25 from the hold state to the call state after switching from the call state to the hold state.
4. The in-vehicle hands-free apparatus according to Claim 3, wherein the playback output unit plays back the voice of the
- 30 party stored in the storage unit, starting from a section of said voice stored at a point of time before the action determination unit switches the state of the call from the call state to the hold state.

5. The in-vehicle hands-free apparatus according to Claim 4,
wherein the playback output unit plays back the voice of the
party stored in the storage unit, starting from a break of syllables in
5 said voice.

6. The in-vehicle hands-free apparatus according to Claim 3,
wherein the playback output unit includes:
a hold time measurement unit operable to measure a hold
10 time from a point of time when the action determination unit
switches the state of the call from the call state to the hold state
until a point of time when the action determination unit switches the
state of the call from the hold state to the call state; and
a playback control unit operable to determine not to play back
15 the voice of the party stored in the storage unit in a case where the
hold time measured by the hold time measurement unit is shorter
than a predetermined threshold.

7. The in-vehicle hands-free apparatus according to Claim 3,
20 wherein the playback output unit includes a playback speed
control unit operable to control a playback speed of the voice of the
party stored in the storage unit.

8. The in-vehicle hands-free apparatus according to Claim 7,
25 wherein the playback output unit further includes an elapsed
time measurement unit operable to measure a time which has
elapsed since the action determination unit switched the state of the
call from the call state to the hold state, and
the playback speed control unit plays back the voice of the
30 party stored in the storage unit at a speed faster than a normal
speed in a case where the elapsed time measured by the elapsed
time measurement unit is equal to or longer than a predetermined

threshold.

9. The in-vehicle hands-free apparatus according to Claim 3, further comprising:

5 a first message generation unit operable to generate, when the action determination unit switches the state of the call from the call state to the hold state, a voice delivery message notifying that the voice of the party uttered during the hold state including a point of time of the switching is delivered to the user; and

10 a sending unit operable to send the voice delivery message to a communication apparatus of the party.

10. The in-vehicle hands-free apparatus according to Claim 9, wherein the first message generation unit further generates a
15 hold message notifying that the action determination unit has switched the state of the call from the call state to the hold state and a hold cancellation message notifying that the action determination unit has switched the state of the call from the hold state to the call state, and

20 the sending unit sends the hold message to the communication apparatus of the party the instant that the action determination unit has switched the state of the call from the call state to the hold state, and sends the hold cancellation message to the communication apparatus of the party the instant that the action
25 determination unit has switched the state of the call from the hold state to the call state.

11. The in-vehicle hands-free apparatus according to Claim 10, wherein the sending unit sends the voice delivery message
30 and the hold message to the communication apparatus of the party repeatedly until the playback output unit ends the playback of the voice of the party stored in the storage unit.

12. The in-vehicle hands-free apparatus according to Claim 3,
further comprising a second message generation unit operable to
generate a playback message notifying that the playback of the
voice of the party stored in the storage unit is to be started,

5 wherein the playback output unit plays back the playback
message and outputs said playback message for the user before
starting the playback of said voice.

10 13. The in-vehicle hands-free apparatus according to Claim 12,
wherein the second message generation unit further
generates a hold message notifying that the action determination
unit has switched the state of the call from the call state to the hold
state and a hold cancellation message notifying that the action
15 determination unit has switched the state of the call from the hold
state to the call state, and

the playback output unit outputs the hold message for the
user the instant that the action determination unit has switched the
state of the call from the call state to the hold state, and outputs the
hold cancellation message for the user the instant that the action
20 determination unit has switched the state of the call from the hold
state to the call state.

14. The in-vehicle hands-free apparatus according to Claim 1,
25 wherein the storage unit has a storage area divided into a
plurality of areas for storing the voice of the party uttered during the
call, and

said voice of the party is divided into sections and stored in
the plurality of areas so that the divided sections of the voice
30 overlap partly each other.

15. A hands-free call method for making a hands-free call using a

telephone in a car, comprising:

a recording step of recording a voice of a party on the other end of the hands-free call during said call;

5 a situation analysis step of analyzing a surrounding situation of the car based on information outputted from at least one sensor for detecting the surrounding situation;

an action determination step of switching a state of the call between a user of the telephone and the party by selecting either a call state in which a call can be made or a hold state in which a call cannot be made, based on a result of the analysis in the situation analysis step; and

10 a playback output step of playing back the voice of the party recorded in the recording step and outputting said voice for the user when the state of the call is switched from the hold state to the call state after being switched from the call state to the hold state in the action determination step.

16. The hands-free call method according to Claim 15,
wherein in the playback output step, the voice of the party
20 recorded in the recording step is played back, starting from a section of said voice stored at a point of time before the state of the call is switched from the call state to the hold state in the action determination step.

25 17. The hands-free call method according to Claim 15,
wherein the playback output step includes:
a hold time measurement substep of measuring a hold time from a point of time when the state of the call is switched from the call state to the hold state until a point of time when the state of the
30 call is switched from the hold state to the call state in the action determination step; and

a playback control substep of determining not to play back the

voice of the party recorded in the recording step in a case where the hold time measured in the hold time measurement substep is shorter than a predetermined threshold.

- 5 18. The hands-free call method according to Claim 15, wherein the playback output step includes:
a playback speed control substep of controlling a playback speed of the voice of the party recorded in the recording step; and
an elapsed time measurement substep of measuring a time
10 which has elapsed since the state of the call was switched from the call state to the hold state in the action determination step, and
in the playback speed control step, the voice of the party is played back at a speed faster than normal speed in a case where the elapsed time measured in the elapsed time measurement substep is
15 equal to or longer than a predetermined threshold.

19. The hands-free call method according to Claim 15, further comprising:

- 20 a first message generation step of generating, when the state of the call is switched from the call state to the hold state in the action determination step, a voice delivery message notifying that the voice of the party uttered during the hold state including a point of time of the switching is delivered to the user; and

25 a sending step of sending the voice delivery message to a communication apparatus of the party.

20. The hands-free call method according to Claim 15, further comprising a second message generation step of generating a playback message notifying that the playback of the voice of the party recorded in the recording step is to be started,

wherein in the playback output step, the playback message is played back and outputted for the user before the playback of said

voice is started.

21. A program for an in-vehicle hands-free apparatus for making a hands-free call using a telephone in a car, the program causing a computer to execute:

a recording step of recording a voice of a party on the other end of the hands-free call during said call;

a situation analysis step of analyzing a surrounding situation of the car based on information outputted from at least one sensor for detecting the surrounding situation;

an action determination step of switching a state of the call between a user of the telephone and the party by selecting either a call state in which a call can be made or a hold state in which a call cannot be made, based on a result of the analysis in the situation analysis step; and

a playback output step of playing back the voice of the party recorded in the recording step and outputting said voice for the user when the state of the call is switched from the hold state to the call state after being switched from the call state to the hold state in the action determination step.